5. (Amended) Skin temperature measuring apparatus comprising:

a housing;

first and second identical thermistors spaced apart in said housing but in proximity to each other and adapted for contact with generally the same area of skin for developing first and second temperature signals, respectively; and

means responsive to said first temperature signal and said second temperature signal for:

(a) developing an indication of the temperature at the skin with which said first thermistor and said second thermistor are in contact, and

(b) detecting a difference between the rate of change of said first temperature signal and the rate of change of said second temperature signal which exceeds a predetermined threshold representing a difference in the proximity of said first thermistor to the skin and the proximity of said second thermistor to the skin.

REMARKS

Reconsideration and allowance of claims 1 and 5, rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5,385,529 to Koch in view of U.S. 5,176,704 to Berndt and U.S. 5,542,421 to Erdman, are respectfully requested.

In characterizing the '529 reference as "having two sensing means spaced apart for contact with the skin." the Examiner has ignored the limitation in claims 1 and 5, as originally presented, that the sensors are "spaced apart in said housing and adapted for contact with generally the same area of skin" (emphasis added). As shown in Figure 1 in the '529 reference, sensor 5 is positioned on the shoulder of the infant and sensor 6 is positioned on the lower leg of the infant. Sensors 5 and 6 in the '529 reference are not "spaced apart in said housing and adapted for contact with generally the same area of skin." Rather, these sensors in

the '529 reference are spaced apart and adapted for contact with skin areas that are very far apart --- almost at the extreme opposite ends of the infant.

The two sensors, specified in claims 1 and 5, are adapted for contact with generally the same area of the skin because, as further specified in claims 1 and 5, when "a difference between the rate of change of said first body function signal and the rate of change of said second body function signal....exceeds a predetermined threshold," a difference in the proximity of said first sensor to the skin and the proximity of said second sensor to the skin is detected," (i.e. a "loose" contact condition of the housing is detected). The arrangement in the '529 reference does not detect a "loose" contact condition of a housing from the signals developed by sensors 5 and 6 or from the processing of these signals.

Instead, the two sensors in the '529 reference measure the core temperature and the peripheral temperature, respectively, of the patient --- the temperatures at two different, widely separated parts of the body (column 7, lines 11 through 14). Neither the problem of loose contact of the housing with the skin nor a solution to this problem is described in the '529 reference.

Neither the '704 reference nor the '421 reference make up for the deficiency of the '529 reference, in that neither of these two references is concerned with the problem of loose contact of the housing with the skin and, therefore, offer no solution to this problem.

Even though claims 1 and 5, as originally presented, distinguished Applicants' invention from the prior art applied in the rejection of claims 1 and 5, Applicants have amended claims 1 and 5 to emphasize that the two sensors, although spaced apart, are in proximity to one another, so that they contact generally the same area of the skin as specified in claims 1 and 5 as originally presented.

Reconsideration and allowance of claims 2, 3, 4, 6, 7 and 8, rejected under 35 U.S.C. 103(a) as being unpatentable over the '529 reference, the '704 reference, and the '421 reference as applied to claims 1 and 5 and further in view

of U.S. 4,331,161 to Patel, are respectfully requested. Contrary to the Examiner's contention, it would not have been obvious to one skilled in the art, at the time Applicants made their invention, to combine these four references to meet the features and details of claims 2, 3, 4, 6, 7, and 8.

(1) the '161 reference discloses a sensor for controlling a heater which indicates a loose contact condition of the sensor with the skin by the interruption of current flow between two probes which are spaced apart in the sensor, but in proximity to each other, for contact with generally the same area of the skin.

(2) the '529 reference discloses a system controlling a heater by signals from two sensors spaced far apart on the body of a patient with no regard for indicating a loose contact condition of the sensors with the skin.

(3) the '704 reference discloses a temperature-responsive pacifier (i.e. a thermometer) for oral temperature measurements with no regard for indicating a loose contact condition with the skin because this unit is not adapted for contact with the skin.

(4) the '421 reference discloses a method and apparatus for cardiovascular diagnosis by sensing blood flow at parts of a person which are spaced far apart (i.e. the left and right palms) and monitoring the rate of change of blood flow at these parts of the body.

The Examiner is incorrect in stating, in the paragraph connecting pages 3 and 4 of the Official Action, that in the Patel reference the "two sensors.....are able to tell the difference between the two signals....." As clearly set forth at various points in Patel reference, the device detects a discontinuity, namely an interruption in current flow, between the device and the patient. This is important because the rejected claims specify that in Applicants' invention "a difference between the rate of change of said first body function signal and the rate of change of said second body function signal" is detected. The Patel reference

device can be characterized as a "YES/NO" device, while Applicants' invention can be characterized as a "HOW MUCH" system.

From the foregoing, we have, according to the Examiner's proposed combination of prior art references, (1) a two probe sensor (with the probes spaced apart, but in proximity to each other, for contact with generally the same area of the skin sensor) which indicates a loose contact condition of the sensor with the skin by the interruption of current flow between the sensor and the skin combined with (2) a system having two sensors spaced far apart on the body of a patient with no regard for indicating a loose contact condition of the sensors with the skin combined with (3) a temperature-responsive pacifier (i.e. a thermometer) for oral temperature measurements with no regard for indicating a loose contact condition with the skin (because this unit is not adapted for contact with the skin) combined with (4) a method and apparatus for cardiovascular diagnosis by sensing blood flow at parts of a person which are spaced far apart (i.e. the left and right palms) and monitoring the rate of change of blood flow at these parts of the body with no regard for indicating a loose contact condition with the skin. The fact that all four references are in the medical art does not make their combination obvious. The only benefit of citing only medical art references is to prevent Applicants from arguing non-obviousness based on the references coming from non-analogous arts.

Only one of the references ('161) is concerned with identifying a loose contact condition and the technique disclosed for sensing this loose contact condition is different from the measurement of changes in blood flow rates ('421) which the Examiner contends is the obvious way to do it even though the measurement of changes in blood flow rates has nothing to do with identifying a loose contact condition. Undoubtedly, the Examiner recognizes that the '529 reference is directed to a system in which two sensors are spaced far apart on the body because the '704 reference is applied for its disclosure of a device for use at a single location of the body. This single location, however, is in the mouth and not on the skin.

The only support the Examiner offers for the position of obviousness is that all of the references come from analogous arts. This is insufficient. Two or

more references coming from analogous arts does not mean automatic obviousness of their combination. Somewhere the prior art must teach or suggest or motivate the combination of references and the Examiner is required to make this showing. A significant omission from the Examiner's conclusion of obviousness is an explanation of just how the four prior art references would be combined. If, instead of simply stating the conclusion of obviousness in general terms, the Examiner were to specifically bring the four disclosures together to define an operative system, we would find such reconstruction that the prior art disclosures would bear little, if any, resemblance to that which is actually disclosed by these references. For example, the '161 reference, as modified by the '421 reference, would be changed from identifying a loose contact condition based on interruption of current flow (i.e. "YES/NO") to one based on changes of rate of blood flow (i.e. "HOW MUCH") and the '421 reference would be changed from cardiovascular diagnosis to loose contact identification. The '529 reference would be modified to place two, widely separated sensors, in proximity to each other, whereby the purpose and function of the system could not be realized. The "pacifier" of the '704 reference would be moved from inside the mouth, where pacifiers are used, to outside the mouth and on the skin where it is unlikely that this pacifier would function as intended and surely would not serve as a pacifier. A very good indicator of unobviousness is the degree and extent of modification of the cited prior art to something which was not contemplated by the patentees or authors of the cited prior art. If the Examiner maintains the rejection of claims 2, 3, 4, 6, 7 and 8 on the cited references or makes a new rejection of these claims based on different prior art references, she is asked to specifically indicate, in support of a contention of obviousness, just how the various references would be combined or modified to result in an operative device or system.

With respect to claims 4 and 8, the Examiner is directed to that portion of Applicants' specification starting at page 3, line 25 and extending to page 4, line 12. The benefits of the flexible substrate and the neck between the two lands are clearly set forth and these features of Applicants' invention cannot be dismissed as being "a design choice."

In view of the foregoing amendments and remarks, this application is in condition for allowance which action is respectfully requested.

Respectfully Submitted,

Andrew L. Ney, Reg. No. 20,300
Attorney for Applicants

Dated: April 29, 1997

Suite 301
One Westlakes, Berwyn
P.O. Box 980
Valley Forge, PA 19482-0980
(610) 407-0700

The Assistant Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. **18-0350** of any fees associated with this communication.

I hereby certify that this correspondence is being deposited with the United States Postal Service, with sufficient postage, as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on:

April 29, 1997

Andrew L. Ney